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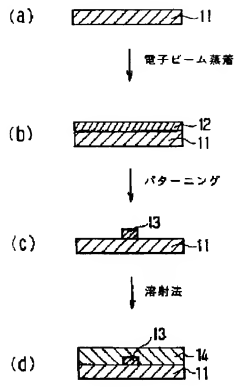
TITLE : PRODUCTION OF OPTICAL WAVEGUIDE



ABSTRACT : PROBLEM TO BE SOLVED: To provide an optical waveguide having performance, mass productivity and low cost characteristic in combination by forming at least part of a core layer or clad layer by using a thermal spraying method.

SOLUTION: The core layer 12 of, for example, 8 μm in film thickness is formed by electron beam(EB) vapor deposition on a quartz glass substrate 11 in common use as a lower clad. A sintered compact mixture composed of SiO_2/GeO_2 is used as the material of the core layer 12. The core is thereafter patterned to 8 μm square by photolithography and reactive ion etching and thereafter an upper clad layer 14 consisting of SiO_2 of, for example, 30 μm in film thickness is formed by using plasma thermal spraying. Finally, the layers are fired at about 1200 to 1500°C, by which the optical waveguide is manufactured. If such thermal spraying method is used, a film forming speed of several μm/sec is sufficiently obtd. and the clad layer requiring the film thickness of at least 10 to 20 μm or above may be extremely rapidly formed. The formation of the optical waveguide to a large area is made possible by executing coating while a torch is kept slid.